RETURN TO MAIN MENU

CLASSIC™ I

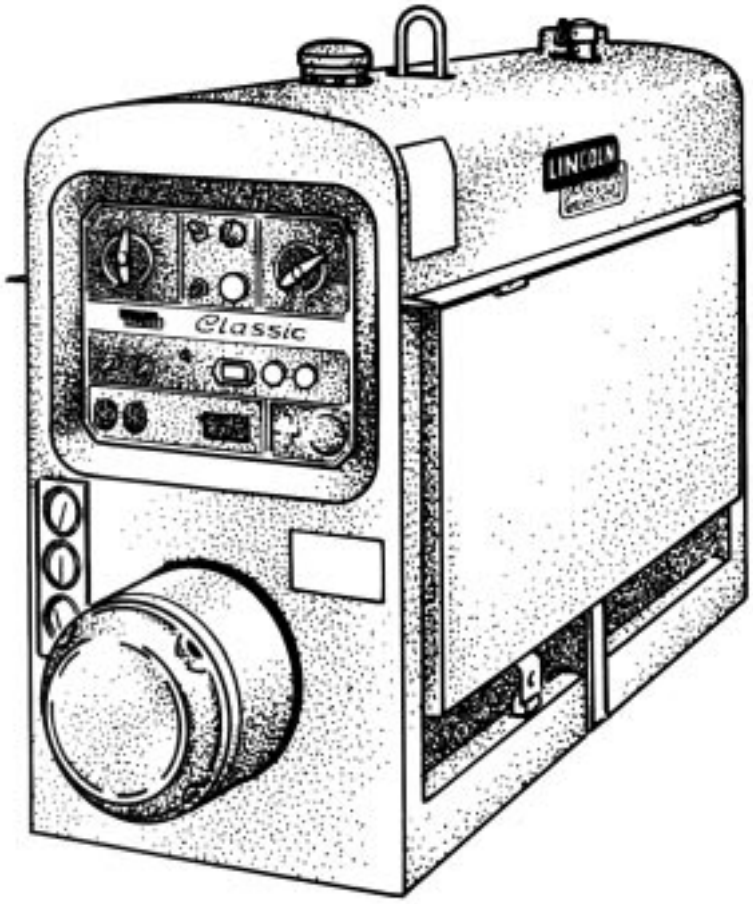
IM514-A

September, 1999

For use with machines having Code Numbers 10068 & 10069.

Safety Depends on You

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT. And, most importantly, think before you act and be careful.



OPERATOR'S MANUAL

ISO 9002
Accredited by the Dutch Council for Certification
REGISTRAR ACCREDITATION BOARD
Manufactured Under a Quality Program Certified by ABS Quality Evaluations, Inc. to ISO 9002 Requirements.
CERTIFICATE NUMBER: 30273

LINCOLN® ELECTRIC

• World's Leader in Welding and Cutting Products •
• Sales and Service through Subsidiaries and Distributors Worldwide •
Cleveland, Ohio 44117-1199 U.S.A. TEL: 216.481.8100 FAX: 216.486.1751 WEB SITE: www.lincolnelectric.com

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.

FOR ENGINE powered equipment.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

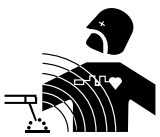
1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

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ELECTRIC SHOCK can kill.

3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- **Semiautomatic DC Constant Voltage (Wire) Welder.**
- **DC Manual (Stick) Welder.**
- **AC Welder with Reduced Voltage Control.**

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS can burn.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES can be dangerous.

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases.When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**

5.b. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.c. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.d. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer’s safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.e. Also see item 1.b.

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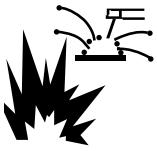


WELDING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to “Safety in Welding and Cutting” (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

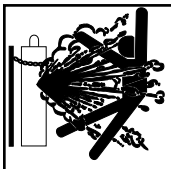
6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been “cleaned”. For information, purchase “Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances”, AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.



CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:

- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically “hot” parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-l, “Precautions for Safe Handling of Compressed Gases in Cylinders,” available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

FOR ELECTRICALLY powered equipment.

8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer’s recommendations.

8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer’s recommendations.

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PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté specifiques qui parraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:

   a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vétements mouillés. Porter des gants secs et sans trous pour isoler les mains.
   b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
   c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état defonctionnement.
   d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
   e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
   f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces precautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.

2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.

3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:

   a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
   b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
   c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.

4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans lateraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.

7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un échauffement et un risque d'incendie.

8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.

9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particuliérement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.

10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.

11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.

2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.

3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.

4. Garder tous les couvercles et dispositifs de sûreté à leur place.

Mar. '93

Thank You —— for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product ••• as much pride as we have in bringing this product to you!

Please Examine Carton and Equipment For Damage Immediately

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, Claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Name & Number _____

Code & Serial Number _____

Date of Purchase _____

Whenever you request replacement parts for or information on this equipment always supply the information you have recorded above.

Read this Operators Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

⚠ WARNING

This statement appears where the information **must** be followed **exactly** to avoid **serious personal injury** or **loss of life**.

⚠ CAUTION

This statement appears where the information **must** be followed to avoid **minor personal injury** or **damage to this equipment**.

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TECHNICAL SPECIFICATIONS – CLASSIC I

Machine

Product Name	Ordering Information	Description	Rated DC Output * Amps / Volts / Duty Cycle	DC Current Range (Fine Adjustment in Each Range)	Auxiliary Power	Dimensions & Weight H x W x L
Classic I	K6090-6	200 Amp DC Welder	Lincoln Plus Rating 200A / 40V / 60%	40 - 300 Amps	1.75 kw	40.9 x 24.0 x 67.5 in
	K6090-5 CSA	All Copper Windings Pure DC Power Generator	NEMA Rating 200A / 28V / 60%	220 - Max 160 - 240 120 - 190 80 - 130 Min - 90	15 Amps @ 120V DC	(1040 x 610 x 1714mm) 1370 lbs (621 kg)

* Based on a 10 min. period.

Engine

Product Name	Description	Horsepower	Operating Speeds	Displacement	Ignition	Capacities
Continental TM27	4 Cylinder 4 Cycle Water-Cooled Gasoline Engine	38 HP @ 1450 RPM	Full Load: 1450 RPM High Idle: 1600±50 RPM Low Idle: 1000 RPM	164.7 Cu. In. (2.7 Ltrs)	Distributor Type Electronic	Fuel: 15 Gals (57 Ltrs) Lubricating Oil: 6.0 Qts (5.7 Ltrs) Coolant: 9.3 Qts (8.8 Ltrs)

GENERAL DESCRIPTION

The Classic I is a heavy duty engine driven DC arc welding power source capable of providing DC constant current output for stick welding and DC TIG welding. With the addition of the optional K384 CV Adapter for K6090 thru -4 or the K623-1 Wire Feed Module for K6090-5, -6, the Classic I will provide constant voltage output for running the LN-25 wire feeder.

The Classic I has a current range of 40-300 DC amps with output ratings as follows:

RATED OUTPUT	DUTY CYCLE
200A @ 28V	60%
200A @ 40V	60%

The units are also capable of providing 1.75 kw of 115V DC auxiliary power.

This unit uses the Continental TM27 industrial water-cooled gasoline engine.

DESIGN SUMMARY

Control Panel

Both the engine and the welder controls are located on one recessed panel at the exciter end of the machine. The welder controls consist of a five step "Current Range Selector" switch and a "Fine Current Adjustment" rheostat. The welder is equipped with a "Start" button, "Ignition" switch, "Idler" control switch, hour meter, choke cable, a battery charging ammeter, and an oil pressure light.

The control panel also contains a three prong grounding type receptacle for auxiliary power.

Welding Generator

The Classic I uses the old style, round, all copper FJW Generator frame which provides the customer with the original "Classic" pipe welding arc.

Engine Idler

The Classic I is equipped with an electronic automatic engine idler. It automatically increases and decreases engine speed when using starting and stopping welding or using auxiliary power. A built-in time delay permits changing electrodes before the engine slows to its low idle speed. The "Idler" control switch on the panel locks the idler in full speed position when desired.

Auxiliary Power

1.75 kw of nominal 120V DC. Output voltage is maintained within ± 10% at all loads up to rated capacity. (See Optional Features for power plug kits).

Welder Enclosure

The complete welder is rubber mounted on a rugged steel "C" channel base.

The output terminals are placed at the side of the machine so that they are protected by the door. The output terminals are labeled (+) and (-).

Ignition System

A Distributor Type electronic ignition is standard.

Cranking System

A 12V electric starter is standard.

Air Cleaner

Heavy duty two-stage dry type

Exhaust

A muffler and rain cap are standard.

Engine Hour Meter

A meter to record the hours of operation.

Carburetor Deicing Kit

Prevents carburetor icing when outside temperature is 60°F/15.5°C or lower.

PRE-OPERATION INSTALLATION

Safety Precautions

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read the engine manufacturer's manual supplied with your welder. It includes important safety precautions, detailed engine starting, operating and maintenance instructions, and parts lists.

ELECTRIC SHOCK can kill.
• Do not touch electrically live parts or electrode with skin or wet clothing.
• Insulate yourself from work and ground
• Always wear dry insulating gloves.

ENGINE EXHAUST can kill.
• Use in open, well ventilated areas or vent exhaust outside.

MOVING PARTS can injure.
• Do not operate with doors open or guards off.
• Stop engine before servicing.
• Keep away from moving parts.

See additional warning information at front of this operator's manual.

Exhaust Spark Arrester

Some federal, state, or local laws may require that engines be equipped with exhaust spark arresters when they are operated in certain locations where unarrested sparks may present a fire hazard. The standard mufflers included with these welders do not qualify as spark arresters. When required by local regulations, suitable spark arrester must be installed and properly maintained.

⚠ CAUTION

Use of an incorrect arrester may lead to engine damage or performance loss. Contact the engine manufacturer for specific recommendations.

Location / Ventilation

Always operate the welder with the doors closed. Leaving the doors open changes the designed air flow and may cause overheating.

The welder should be located to provide an unrestricted flow of clean, cool air. Also, locate the welder so that engine exhaust fumes are properly vented to an outside area.

Machine Grounding

According to the United States National Electrical Code, the frame of this portable generator is not required to be grounded and is permitted to serve as the grounding means for cord connected equipment plugged into its receptacle.

Some state, local, or other codes or unusual operating circumstances may require the machine frame to be grounded. It is recommended that you determine the extent to which such requirements may apply to your particular situation and follow them explicitly. A machine grounding stud marked with the symbol ⏚ is provided on the welding generator frame foot. (If an older portable welder does not have a grounding stud, connect the ground wire to an unpainted frame screw or bolt). In general, if the machine is to be grounded it should be connected with a #8 or larger copper wire to a solid earth ground such as a metal water pipe going into the ground for at least ten feet and having no insulated joints, or to the metal framework of a building which has been effectively grounded. The U.S. National Electrical Code lists a number of alternate means of grounding electrical equipment.

ANGLE OF OPERATION

To achieve optimum engine performance the Classic I should be run in a level position. The maximum angle of operation for the TM27 engine is 60 degrees in a direction to cause the air intake manifold to be angled up, 45 degrees for the air intake manifold to be angled down; and 50 degrees for the welder control panel to be angled up or down. If the engine is to be operated at an angle, provisions must be made for checking and maintaining the oil level at the normal (FULL) oil capacity in the crankcase. When operating the welder at an angle, the effective fuel capacity will be slightly less than the specified 15 gallons.

Lift Bail

A lift bail is provided for lifting with a hoist.

⚠ WARNING

FALLING EQUIPMENT can cause injury.

- Do not lift this machine using lift bail if it is equipped with a heavy accessory such as a trailer or gas cylinder.
- Lift only with equipment of adequate lifting capacity.
- Be sure machine is stable when lifting.

Trailers (See optional features)

If the user adapts a non-Lincoln trailer, he must assume responsibility that the method of attachment and usage does not result in a safety hazard, nor damage the welding equipment. Some of the factors to be considered are as follows:

1. Design capacity of trailer vs. weight of Lincoln equipment and likely additional attachments.
2. Proper support of, and attachment to, the base of the welding equipment so there will be no undue stress to the framework.
3. Proper placement of the equipment on the trailer to ensure stability side to side and front to back when being moved and when standing by itself while being operated or serviced.
4. Typical conditions of use, i.e., travel speed; roughness of surface on which the trailer will be operated; environmental conditions; likely maintenance.
5. Conformance with federal, state, and local laws. (1)

(1) Consult applicable federal, state, and local laws regarding specific requirements for use on public highways.

Polarity Control and Cable Sizes

With the engine off, route the electrode and work cables through the strain relief bracket on the base and connect to the studs located below the fuel tank mounting rail. (see size recommendations below). For **Positive** polarity, connect the electrode cable to the terminal marked **"Positive"**. For **Negative** polarity, connect the electrode cable to the **"Negative"** stud. These connections should be checked periodically and tightened if necessary.

When welding at a considerable distance from the welder, be sure you use ample size welding cables.

RECOMMENDED COPPER CABLE SIZES

		Cable Sizes for Combined Length of Electrode Plus Work Cable	
Amps	Duty Cycle	Up to 200 ft	200-250 ft
200	60%	1	1/0

PRE-OPERATION SERVICE

⚠ CAUTION

READ the engine operating and maintenance instructions supplied with this machine.

⚠ WARNING

Fuel can cause fire or explosion.

- Stop engine while fueling.
- Do not smoke when fueling.
- Do not overfill tank.
- Keep sparks and flame away from tank.
- Wipe up spilled fuel and allow fumes to clear before starting engine.

Oil

This unit is supplied from the factory with the engine crankcase filled with a high quality SAE 10W/30 oil. This oil should be acceptable for most typical ambient temperatures. Consult the engine operation manual for specific engine manufacturers recommendations. Upon receipt of the welder, check the engine dipstick to be sure the oil is at the "full" mark. Add oil at the dipstick tube if required. **DO NOT OVERFILL.**

Fuel

Fill the fuel tank with the grade of fuel recommended din the Engine Operator's Manual. make sure fuel valve on the sediment bowl is in the open position.

Cooling System

The radiator has been filled at the factory with a 50-50 mixture of ethylene glycol antifreeze and water. Check the radiator level and add a 50-50 solution as needed. (See engine manual or antifreeze container for alternate antifreeze recommendations.)

Battery Charging

⚠ WARNING

GASES FROM BATTERY can explode.
- Keep sparks, flame and cigarettes away.

BATTERY ACID can burn eyes and skin.
- Wear gloves and eye protection and be careful when boosting, charging or working near battery.

To prevent EXPLOSION when:

a) Installing a new battery - disconnect the negative cable from the old battery first and connect the negative cable to the new battery last.
b) Connecting a battery charger - remove the battery from the welder by disconnecting the negative cable first, then the positive cable and battery clamp. When reinstalling, connect the negative cable last.
c) Using a booster - connect the positive lead to the battery first, then connect the negative lead to the ground lead on the base.

To prevent ELECTRICAL DAMAGE when:

a) Installing a new battery.
b) Using a booster.

Use correct polarity - **Negative Ground**.

To prevent BATTERY DISCHARGE, if you have an ignition switch, turn it off when engine is not running.

- To prevent BATTERY BUCKLING, tighten nuts on battery clamp until snug.

The Classic I is equipped with a wet charged battery. The charging current is automatically regulated when the battery is low (after starting the engine) to a trickle current when the battery is fully charged.

When replacing, jumping, or otherwise connecting the battery to the battery cables the proper polarity must be observed. The correct polarity is **NEGATIVE GROUND.**

ENGINE OPERATION

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read the engine manufacturer's manual supplied with your welder. It includes important safety precautions, detailed engine starting, operating and maintenance instructions, and parts lists.

ELECTRIC SHOCK can kill.
• Do not touch electrically live parts or electrode with skin or wet clothing.
• Insulate yourself from work and ground
• Always wear dry insulating gloves.

ENGINE EXHAUST can kill.
• Use in open, well ventilated areas or vent exhaust outside.

MOVING PARTS can injure.
• Do not operate with doors open or guards off.
• Stop engine before servicing.
• Keep away from moving parts.

See additional warning information at front of this operator's manual.

Operate the welder with the doors closed. Leaving the doors open changes the designed air flow and can cause overheating.

Starting the Continental TM27 Engine

a) Turn the Idler control switch to "HIGH".

b) Turn the Ignition switch to "ON".

c) Pull out the Choke cable.

d) Press the "Start" button.

e) If the engine fails to start in 60 seconds, wait 30 seconds before repeating the above procedure.

f) Allow the engine to run at high idle speed for several minutes to warm up. Cold engines tend to run at a speed too slow to supply the voltage required for proper idler operation.

g) As the engine warms, slowly return the choke control to the in (off) position.

Stopping the Engine

1. Turn the Ignition switch to "OFF".

At the end of each day's welding, refill the fuel tank to minimize moisture condensation in the tank. Also, running out of fuel tends to draw dirt into the fuel system.

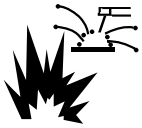
When hauling the welder between job sites, close the fuel feed valve beneath the fuel tank. Failure to turn the fuel off when traveling can cause carburetor flooding and difficult starting at the new job site.

WELDER OPERATION

⚠ WARNING

ELECTRIC SHOCK can kill.
• Do not touch electrically live parts or electrode with skin or wet clothing.
• Insulate yourself from work and ground.

FUMES & GASES can be dangerous.
• Keep your head out of the fumes.
• Use ventilation or exhaust to remove fumes from breathing zone.



WELDING SPARKS can cause fire or explosion.
• Keep flammable material away.

ARC RAYS can burn.
• Wear eye, ear, and body protection.

Duty Cycle

The NEMA output rating of the Classic I is 200 amperes at 28[(1)] arc volts on a 60% duty cycle. Duty cycle is based on a ten minute period; thus, the welder can be loaded at rated output for six minutes out of every ten minute period.

(1) The Lincoln "plus output" rating at 60% duty cycle is 200 amperes at 40 Volts.

Control of Welding Current

⚠ CAUTION

DO NOT TURN THE "CURRENT RANGE SELECTOR" WHILE WELDING because the current may arc between the contacts and damage the switch.

The "Current Range Selector" provides five overlapping current ranges. The "Fine Current Adjustment" adjusts the current from minimum to maximum within each range. Open circuit voltage is also controlled by the "Fine Current Adjustment" permitting control of the arc characteristics.

A high open circuit voltage setting provides the soft "buttering" arc with the best resistance to pop-outs preferred for most welding. To get this characteristic, set the "Current Range Selector" to the lowest setting that still provides the current you need and set the "Fine Current Adjustment" near maximum. For example: to obtain 175 amps and a soft arc, set the "Current Range Selector" to the 190-120 position and then adjust the "Fine Current Adjustment" for 175 amps.
When a forceful "digging" arc is required, usually for vertical and overhead welding, use a higher "Current Range Selector" setting and lower open circuit voltage. For example: to obtain 175 amps and a forceful arc, set the "Current Range Selector" to the 240-160 position and the "Fine Current Adjustment" setting to get 175 amps.

⚠ CAUTION

DO NOT attempt to set the "Current Range Selector" between the five points designated on the nameplate.

These switches have a spring loaded cam which almost eliminates the possibility of setting this switch between the designated points.

Carburetor Deicing Kit

A carburetor deicing kit is installed on Classic I welders leaving the factory. The purpose of the Carburetor Deicing Kit is to prevent carburetor icing when the outside temperature is 60°F/15.5°c or lower. See Carburetor Deicing Kit Usage Instructions For Seasonal Change Over on page B3.

To obtain **REPLACEMENT PARTS** for the Carburetor Deicing Kit contact WIS-CON TOTAL POWER CORPORATION.

Wis-Con Part#	Description
10221023	Complete Carburetor Deicing Kit
10220028	Angled Heat Collector Shield
10060025	2"x18" Flexible Hose (Gates 28095)
X02355 #36	1.56"-2.50" Gear Clamp
XM32067	M10X70 Bolt
XM37004	3/8" Flat Washer
10250021	Notice Decal
LIT10278	Installation Instructions

Idler Operation

Start the engine with the "Idler" switch in the "HIGH" position. Allow it to run at high idle speed for several minutes to warm the engine. The operating speeds are as follows:

ORDERING INFO.	ENGINE	FULL LOAD	HIGH IDLE	LOW IDLE
K6090-ALL	Cont. TM27	1450	1600±50	1000

The idler is controlled by the "Idler" toggle switch on the welder control panel. The switch has two positions as follows:

1. In the "High" position, the idler is off, and the engine runs at the high speed controlled by the governor.
2. In the "Automatic" / position, the idler operates as follows:
   a. When welding or drawing power for lights or tools (approximately 100-150 watts minimum) from the receptacle, the engine operates at full speed.
   b. When welding ceases or the power load is turned off, a preset time delay of about 15 seconds starts. This time delay cannot be adjusted.
   c. If the welding or power load is not re-started before the end of the time delay, the idler reduces the engine to low idle speed.

Auxiliary Power

1.75 kw of 120V DC auxiliary power is available at the receptacle located below the nameplate.

CARBURETOR DEICING KIT USAGE INSTRUCTIONS FOR SEASONAL CHANGE OVER

⚠ WARNING

ELECTRIC SHOCK can kill.

• Do not operate with panels open.
• Disconnect NEGATIVE(-) BATTERY LEAD before servicing.
• Do not touch electrically live parts.

MOVING PARTS can injure.
• Keep guards in place.

• Keep away from moving parts.
• Only qualified personnel should install, use or service this equipment.

The engine MUST BE COLD before seasonal change over of the carburetor deicing kit.

When the AVERAGE AIR INTAKE TEMPERATURE (Average Ambient) is:

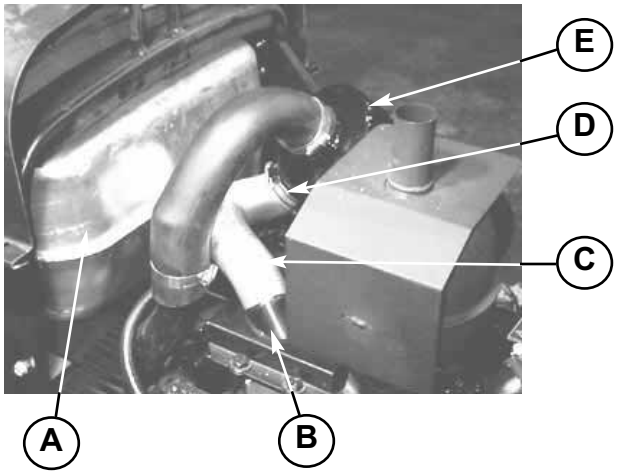
Below 60°F / 15.5°C (Winter Season Configuration)

1. With the engine OFF, remove the negative cable from the battery.

2. Push the FLEXIBLE HOSE fully onto the HEAT COLLECTOR SHIELD outlet tube, see Figure 1.

3. Reconnect negative battery cable.

FIGURE 1



A. FUEL TANK
B. HEAT COLLECTOR SHIELD
C. FLEXIBLE HOSE
D. GEAR CLAMP
E. AIR FILTER

Above 60°F / 15.5°C (Summer Season Configuration)

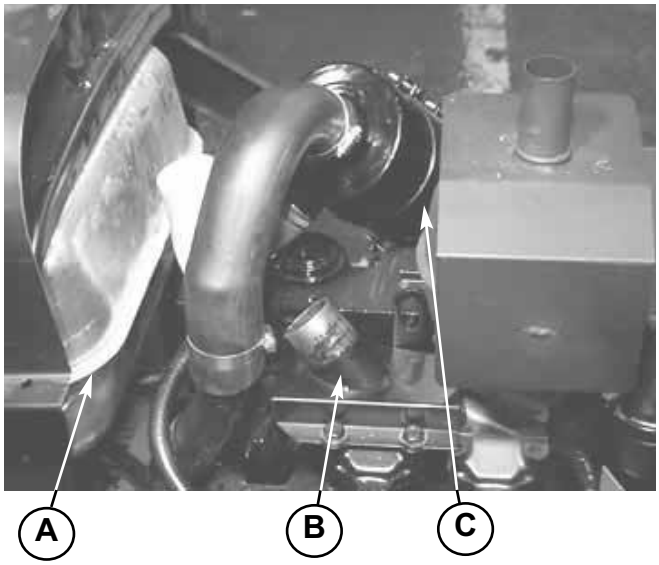
1. With the engine OFF, remove the negative cable from the battery.

2. Remove the FLEXIBLE HOSE from the HEAT COLLECTOR SHIELD outlet tube.

3. The **FLEXIBLE HOSE** is to be positioned per figure 2.
IMPORTANT: 1/2" clearance between the **FLEXIBLE HOSE** and the fuel tank edge is required. Also 2" clearance between **FLEXIBLE HOSE** and roof.

4.Reconnect negative battery cable.

FIGURE 2



A. FLEXIBLE HOSE
B. HEAT COLLECTOR SHIELD
C. AIR FILTER

NOTE: On welders received directly from the factory, the "Deicing" kit is configured for "summer Seasons"

OPTIONAL FEATURES (field Installed)

Accessory Set (K702)

Includes 35 ft (10.7m) electrode and 30 ft (9.1m) work cables, headshield, work clamp, and electrode holder.

CV Adapter (K384) K6090 thru -4 only

Provides constant voltage output for semiautomatic welding. Select either CV or CC.

Linc-Thaw™ (L2964-1) - Includes meter and fuses to protect welder when thawing frozen water pipes.

⚠ WARNING

Pipe Thawing IS NOT a CSA approved procedure. If not done properly, it can result in fire, explosion, damage to wiring which may make it unsafe, damage to pipes, burning up the welder, or other hazards.

Do not use a welder to thaw pipe before reviewing Lincoln Bulletin E695.1 (dated October 1987 or later.)

Power Plug Kit (K802A)

Provides auxiliary plug for a 120V receptacle.

Remote Control

For "Stick" operation. contains switch, remote control rheostat, and 100 ft (30.5m) or 25 ft (7.6m) cable. Easy Installation.

K6090 thru -4
- 25 ft **(K888-3)**
- 100 ft **(K888-4)**

K6090-5, -6
- 100 ft **(K924-1)**

Trailer (K768)

For in-plant and yard towing at speeds under 10 mph. 37" (94cm) wheel track for narrow pathways & entranceways.

Trailer (K780)

Rugged, two-wheeled trailer with brakes, lights, and fenders. 54" (137cm) wheel track. For highway use, consult applicable federal, state, and local laws regarding possible additional requirements.

Trailer (K913)

Two-wheeled highway trailer with steel, torsion-bar axle, 54" (137cm) wheel track. Low sway, low center-of-gravity. Sturdy tread plate platform. Choice of 3 hitches. Add on fender & light package. For highway use, consult applicable federal, state, and local laws regarding possible additional requirements.

K913-1 Base Trailer
K913-2 Ball Hitch
K913-3 Lunette Eye Hitch
K913-4 Clevis Pin Hitch
K913-5 Fender & Light Kit

Wire Feed Module (K623-1) K6090-5, -6 only

Provides constant voltage (CV) output with improved arc stability for Innershield welding. Also, excellent for MIG welding. Easy Installation. Recommended wire feeder is the LN-25.

MAINTENANCE

⚠ WARNING

Have qualified personnel do the maintenance work. Turn the engine off before working inside the machine. In some cases, it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

Do not put your hands near the engine cooling blower fan. If a problem cannot be corrected by following the instructions, take the machine to the nearest Lincoln Field Service Shop.

ELECTRIC SHOCK can kill.
• Do not touch electrically live parts or electrode with skin or wet clothing.
• Insulate yourself from work and ground
• Always wear dry insulating gloves.

ENGINE EXHAUST can kill.
• Use in open, well ventilated areas or vent exhaust outside.

MOVING PARTS can injure.
• Do not operate with doors open or guards off.
• Stop engine before servicing.
• Keep away from moving parts.

See additional warning information at front of this operator's manual.

General Instructions

1. Blow out the welder and controls with an air hose at least once every two months. In particularly dirty locations, this cleaning may be necessary once a week. Use low pressure air to avoid driving dirt into the insulation.

2. "Current Range Selector" contacts should not be greased. To keep the contacts clean, rotate the current control through its entire range frequently. Good practice is to turn the handle from maximum to minimum setting twice each morning before starting to weld.

3. Change the crankcase oil and oil filter after the first 50 hours of operation and thereafter at regular intervals using the proper grade of oil. See the recommendations in the engine operation manual.

4. Inspect the air filter daily - - more often in dusty conditions when necessary clean or replace. The filter should never be removed while the engine is running. The air filter should never be removed while the engine is running. The air filter element part number is Donaldson #181050 or Nelson #70206N.

5. When necessary, remove the sediment bowl from beneath the gas tank and clean out any accumulated dirt and water. Replace the fuel filter in the fuel line as needed. In an emergency, the fuel filter can be back-flushed for continued use until a replacement can be obtained.

6. Fan belts tend to loosen after the first 50 hours of operation. Check engine operation manual and tighten if necessary. DO NOT OVERTIGHTEN.

7. Put a drop of oil on the "Current Range Selector" shaft at least once every month.

8. Keep governor and carburetor toggles and butterfly valve shaft clean and lubricated.

9. See the engine manufacturers operation manual for detailed engine maintenance and troubleshooting instructions.

Cooling System

The Classic I is equipped with a pressure radiator. Keep the radiator cap tight to prevent loss of coolant. Clean and flush the cooling system periodically to prevent clogging the passage and overheating the engine. When antifreeze is needed, always use the permanent type.

ORDERING INFORMATION	COOLING SYSTEM CAPACITY
K6090-ALL	9.3 Quarts

Bearings

This welder is equipped with a double-shielded ball bearing having sufficient grease to last indefinitely under normal service. Where the welder is used constantly or in excessively dirty locations, it may be necessary to add one-half ounce of grease per year. A pad of grease one inch wide, one inch long, and one inch high weighs approximately one-half ounce. Over-greasing is far worse than insufficient greasing.

When greasing the bearings, keep all dirt out of the area. Wipe the fittings completely clean and use clean equipment. More bearing failures are caused by dirt introduced during greasing than from insufficient grease.

Commutator and Brushes

⚠ WARNING

Uncovered rotating equipment can be dangerous. Use care so your hands, hair, clothing or tools do not catch in the rotating parts. Protect yourself from particles that may be thrown out by the rotating armature when stoning the commutator.

The generator brushes are properly adjusted when the welder is shipped. They require no particular attention. DO NOT SHIFT THE BRUSHES or adjust the rocker setting. Shifting of the brushes may result in:

- Change in machine output
- Commutator damage
- Excessive brush wear

Periodically inspect the commutator and brushes by removing the covers. DO NOT remove or replace these covers while the machine is running.

Commutators require little attention. However, if they are black or appear uneven, have them cleaned by an experienced maintenance man using fine sandpaper or a commutator stone. Never use emery cloth or paper for this purpose.

Replace brushes when they wear within 1/4” of the pigtail. A complete set of replacement brushes should be kept on hand. Lincoln brushes have a curved face to fit the commutator. Have an experienced maintenance man seat these brushes by lightly stoning the commutator as the armature rotates at full speed until contact is made across the full face of the brushes. After stoning, blow out the dust with low pressure air.

Arcing or excessive exciter brush wear indicates a possible misaligned shaft. Have an authorized Field Service Shop check and realign the shaft.

Idler Maintenance

⚠ CAUTION

Before doing electrical work on the idler printed circuit board, disconnect the battery.

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1. The solenoid plunger must work freely because binding can cause engine surging. If surging occurs, be sure the plunger is properly lined up with the carburetor lever. Dust the plunger about once a year with graphite powder.

2. When any service is done, reassemble the rubber bellows on the solenoid plunger with the vent hole on the lower side.

3. Proper operation of the idler requires good grounding of the printed circuit board (through its mounting), reed switch, and battery.

4. If desired, the welder can be used without automatic idling by setting the “Idler” switch to the “High Idle” position.

5. When installing a new battery or using a jumper battery to start the engine, be sure the battery polarity is connected properly. The correct polarity is negative ground. Damage to the engine alternator and the printed circuit board can result from incorrect connection.

Nameplates

Whenever routine maintenance is performed on this machine - - or at least yearly - - inspect all nameplates and labels for legibility. Replace those which are no longer clear. Refer to the parts list for the replacement item number.

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).
Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.
The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION
This column provides a course of action for the Possible Cause.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact you local Lincoln Authorized Field Service Facility.

⚠ WARNING

ELECTRIC SHOCK can kill.
- **Do not touch electrically live parts such as output terminals or internal wiring.**

ENGINE EXHAUST can kill.
- **Use in open, well ventilated areas or vent exhaust outside.**

MOVING PARTS can injure.
- **Do not operate with doors open or guards off.**
- **Stop engine before servicing.**
- **Keep away from moving parts.**

- **Remove guards only when necessary and replace when work requiring removal is complete.**
- **Only qualified personnel should install, use or service this equipment.**

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed througout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSES	RECOMMENDED COURSE OF ACTION
PROBLEMS		
1. Machine fails to hold the heat constantly.	a. Rough or dirty commutator.	a. Commutator should be turned or cleaned.
	b. Brushes may be worn down to limit.	b. Replace brushes.
	c. Field circuit may have variable resistance connection or intermittent open circuit due to loose, or broken wire.	c. Check field current with ammeter to discover varying current. This applies to both the main generator and exciter.
	d. Electrode lead or work lead connection may be poor.	d. Tighten all connections.
	e. Wrong grade of brushes may have been installed on generator.	e. Use Lincoln brushes.
	f. Field rheostat may be making poor contact and overheating.	f. Inspect and clean the rheostat.
2. Welder starts but fails to generate current.	a. Generator or exciter brushes may be loose or missing.	a. Be sure that all brushes bear on the commutator and have proper spring tension.
	b. Exciter may not be operating.	b. Check exciter output voltage with voltmeter or lamp.
	c. Field circuit of generator or exciter may be open.	c. Check for open circuits in rheostat, field leads, and field coils. Check rectifier bridge.
	d. Exciter may have lost excitation.	d. Flash fields. **
	e. Series field and armature circuit may be open-circuited.	e. Check circuit with ringer or voltmeter.
3. Welding arc is loud and spatters excessively.	a. Current setting may be too high.	a. Check setting and current output with ammeter.
	b. Polarity may be wrong.	b. Check polarity. Try reversing polarity or try an electrode of the opposite polarity.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed througout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSES	RECOMMENDED COURSE OF ACTION
PROBLEMS		
4. Welding current too great or too small compared to indication on the dial.	a. Exciter output low causing low output compared to dial indication.	a. Check exciter field circuit.
	b. Operating speed too low or high.	b. Adjust speed screw on governor for rated RPM operating speed.
5. Arc continuously pops out.	a. "Current Range Selector" switch may be set at an intermediate position.	a. Set the switch at the center of the current range desired.
6. Engine fails to start.	a. Out of fuel.	a. Fill with at least 75 octane gasoline.
	b. Clogged fuel system.	b. Check all lines to carburetor.
	c. Choke not closing tightly.	c. Loosen choke cable screw and slack off choke wire.
	d. Ignition switch shorted or open.	d. Replace.
	e. Moisture or carbon on spark plugs.	e. Remove plugs, clean, and adjust gap to 0.032".
	f. Defective distributor.	f. Replace.
7. Low oil pressure. Light not lit when engine running.	a. Oil too light.	a. Drain; refill with proper grade.
	b. Oil too low.	b. Fill to "Full" mark on bayonet gauge. Do not overfill.
	c. Defective oil pressure switch or light.	c. Replace.
8. Lack of Power.	a. Carbon deposits causing pre-ignition.	a. Run engine under full load for a short time.
	b. Incorrect timing.	b. Time ignition. *

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed througout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSES	RECOMMENDED COURSE OF ACTION
PROBLEMS		
9. Overheating.	a. No water in radiator or clogged cooling system.	a. Check throughout for dirty or broken hoses, clogged radiator, or defective water pump.
	b. Late timing.	b. Time ignition. * Intake .014 Exhaust .018
	c. Improper valve clearance.	c. Adjust valve tappets (cold settings.)
	d. Fan belt too loose.	d. Adjust for 3/4” to 1” deflection.
10. Knocking.	a. Poor grade of gasoline.	a. Use at least 75 octane gasoline.
	b. Spark advanced too far.	b. Retime ignition. *
11. Surging.	a. Governor and carburetor toggles and butterfly valve shaft lever are dirty and sticking.	a. Clean and lubricate. Replace toggles if worn.
	b. Dirty air filter.	b. Remove and clean according to instructions on unit.
	c. Governor spring adjusting screw misadjusted.	c. Adjust screw enough to eliminate surge. *
	d. Governor control rod wrong length.	d. Adjust length of control rod so that there is from 1/32” to 1/16” clearance between the stop pin and the stop when the engine is shutoff and the regulator expanded. *
12. Large decrease in speed.	a. Misadjusted governor spring adjusting screw.	a. Adjust screw until speed does not drop more than 100 RPM ± 25 RPM when arc is struck. If surge occurs, eliminate it with the control rod. If high idle speed changes, readjust the high idle speed screw. *

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed througout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
PROBLEMS		
13. Unable to strike an arc.	a. Idle speed screw is misadjusted.	a. Idle speed is set too low so idler fails to operate when arc is struck. Adjust low idle speed screw for 1000-1050.
14. Engine runs irregularly.	a. Carburetor set too lean.	a. Adjust carburetor adjusting screw so engine will run smoothly at idle speed. *
	b. Carburetor Deicing Kit in wrong configuration.	b. Carburetor Deicing Kit per instructions on pages B2 and B3.
15. Engine fails to pick up speed when arc is struck.		a. Check the idler.

* See engine manual. * * Flashing the fields.

Flashing the exciter field consists of passing current through the fields using an external source of 6 to 125 volts of DC power from a storage battery or DC generator. If using a DC generator, keep the generator turned off except when actually applying the flashing current. To flash the fields:

1. Turn the welder off. Raise one exciter brush off the commutator.

2. On Lincoln welders, attach the positive lead from the external DC source to the right hand brushholder.

3. Carefully holding an insulated section of the negative lead from the DC source, touch its lug or clamp to the left hand brushholder for five seconds. Pull it away quickly to minimize arcing.

Remove the lead from the right hand brushholder, replace the brush on the commutator, start the welder and the generator voltage should build up.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

ELECTRONIC IDLER TROUBLESHOOTING GUIDE

Engine Will Not Return to Idle in Approximately 15 Seconds

↓

Set Idler Control Switch to the Auto Position

↓

Check to See Whether Oil Pressure Light is On and Alternator is Charging

Light Off

If Oil Light is O.K., Replace Oil Pressure Switch

Light On

Check Continuity of Idler Control Switch

Continuity Good

1. Reed switch in weld circuit may be stuck closed.
2. Check continuity of idler solenoid coil (25 ohms).
3. Replace P.C. Board.

Open

Replace Switch

Engine Will Not Pick Up Speed When:

The Arc is Struck

Reed Switch in Weld Circuit **Defective -- Will Not Close**

To Check: Short the Red Lead on P.C. Board to Welder Frame.

Engine Picks Up Speed When Arc is Struck

1. Replace Reed Switch in Weld Circuit.

Engine Does Not Pick Up Speed

Replace P.C. Board

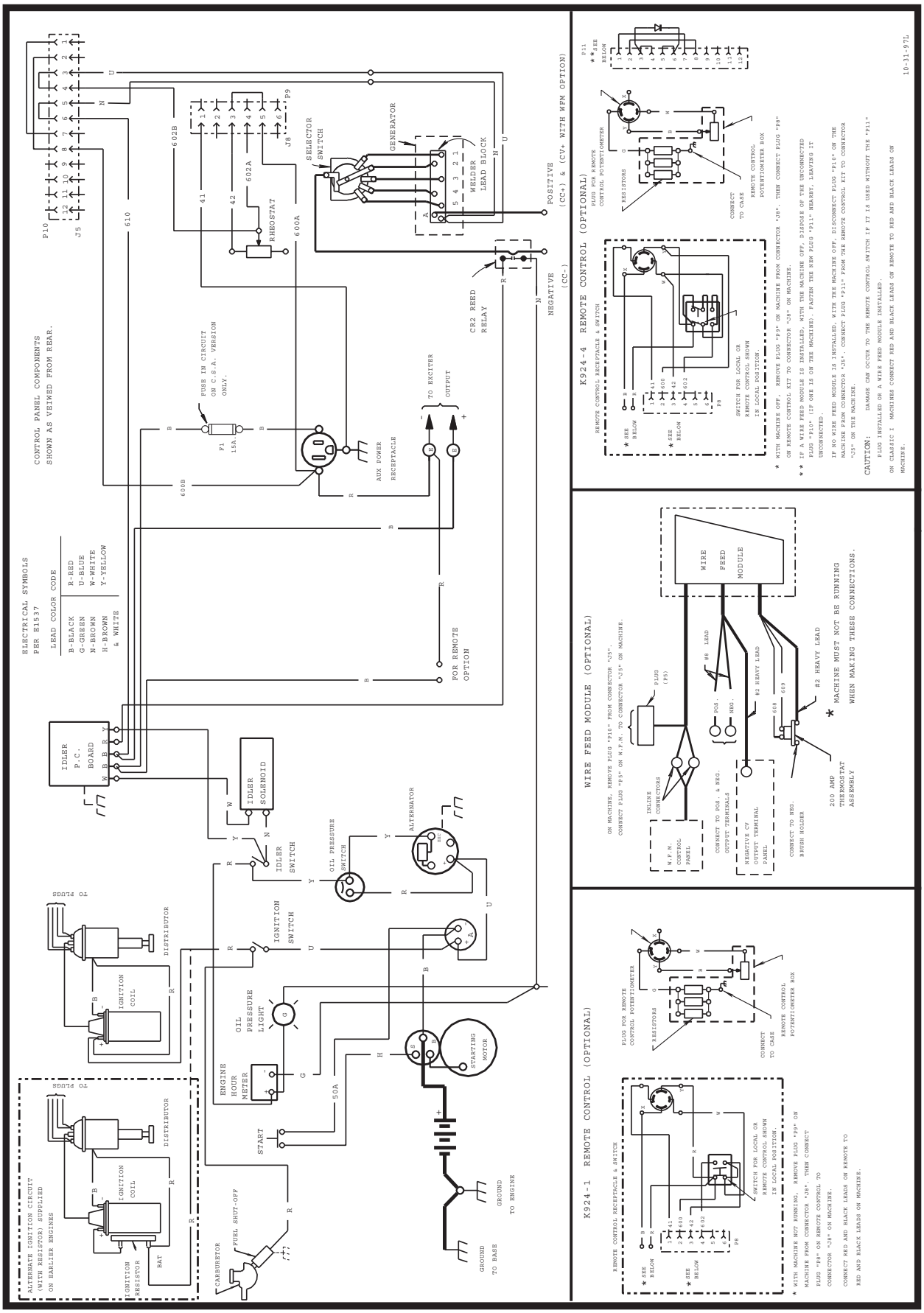
The Auxiliary Power Load is Turned On

Power Load Too Small **Try Load Above 150 Watts**

Engine Does Not Pick Up Speed

Check Connections and Continuity of Current Transformer.

Replace P.C. Board


CLASSIC I - WIRING DIAGRAM
ELECTRICAL SYMBOLS PER E1537
LEAD COLOR CODE
B-BLACK R-RED
G-GREEN U-BLUE
N-BROWN W-WHITE
H-BROWN Y-YELLOW
& WHITE
CONTROL PANEL COMPONENTS SHOWN AS VIEWED FROM REAR.
IDLER P.C. BOARD
IDLER SOLENOID
IDLER SWITCH
OIL PRESSURE SWITCH
ALTERNATOR
IGNITION SWITCH
DISTRIBUTOR
IGNITION COIL
TO PLUGS
ENGINE HOUR METER
OIL PRESSURE LIGHT
START
50A
STARTING MOTOR
GROUND TO BASE
GROUND TO ENGINE
CARBURETOR
FUEL SHUT-OFF
ALTERNATE IGNITION CIRCUIT (WITH RESISTOR) SUPPLIED ON EARLIER ENGINES
IGNITION RESISTOR
BAT
FUSE IN CIRCUIT ON C.S.A. VERSION ONLY.
F1 15A
AUX POWER RECEPTACLE
TO EXCITER OUTPUT
CR2 REED RELAY
FOR REMOTE OPTION
RHEOSTAT
600A
602A
602B
610
41
42
SELECTOR SWITCH
GENERATOR
WELDER LEAD BLOCK
POSITIVE (CC+) & (CV+ WITH WFM OPTION)
NEGATIVE (CC-)
P10
J5
J8
P9
K924-1 REMOTE CONTROL (OPTIONAL)
REMOTE CONTROL RECEPTACLE & SWITCH
PLUG FOR REMOTE CONTROL POTENTIOMETER
RESISTORS
CONNECT TO CASE
REMOTE CONTROL POTENTIOMETER BOX
SWITCH FOR LOCAL OR REMOTE CONTROL SHOWN IN LOCAL POSITION.
* WITH MACHINE NOT RUNNING, REMOVE PLUG "P9" ON MACHINE FROM CONNECTOR "J9". THEN CONNECT PLUG "P8" ON REMOTE CONTROL TO CONNECTOR "J8" ON MACHINE.
CONNECT RED AND BLACK LEADS ON REMOTE TO RED AND BLACK LEADS ON MACHINE.
WIRE FEED MODULE (OPTIONAL)
ON MACHINE, REMOVE PLUG "P10" FROM CONNECTOR "J5". CONNECT PLUG "P5" ON W.F.M. TO CONNECTOR "J5" ON MACHINE.
W.F.M. CONTROL PANEL
IDLER CONNECTORS
PLUG (P5)
CONNECT TO POS. & NEG. OUTPUT TERMINALS
NEGATIVE CV OUTPUT TERMINAL PANEL
WIRE FEED MODULE
#0 LEAD
#2 HEAVY LEAD
POS.
NEG.
609
610
#2 HEAVY LEAD
* MACHINE MUST NOT BE RUNNING WHEN MAKING THESE CONNECTIONS.
CONNECT TO NEG. WORK HOLDER
200 AMP THERMOSTAT ASSEMBLY
K924-4 REMOTE CONTROL (OPTIONAL)
REMOTE CONTROL RECEPTACLE & SWITCH
PLUG FOR REMOTE CONTROL POTENTIOMETER
RESISTORS
CONNECT TO CASE
REMOTE CONTROL POTENTIOMETER BOX
SWITCH FOR LOCAL OR REMOTE CONTROL SHOWN IN LOCAL POSITION.
* WITH MACHINE OFF, REMOVE PLUG "P9" ON MACHINE FROM CONNECTOR "J8". THEN CONNECT PLUG "P8" ON REMOTE CONTROL KIT TO CONNECTOR "J8" ON MACHINE.
** IF A WIRE FEED MODULE IS INSTALLED, WITH THE MACHINE OFF, DISPOSE OF THE UNCONNECTED PLUG "P11" (IF ONE IS ON THE MACHINE). FASTEN THE NEW PLUG "P11" NEARBY, LEAVING IT UNCONNECTED.
IF NO WIRE FEED MODULE IS INSTALLED, WITH THE MACHINE OFF, DISCONNECT PLUG "P10" ON THE MACHINE FROM CONNECTOR "J5". CONNECT PLUG "P11" FROM THE REMOTE CONTROL KIT TO CONNECTOR "J5" ON THE MACHINE.
CAUTION: DAMAGE CAN OCCUR TO THE REMOTE CONTROL SWITCH IF IT IS USED WITHOUT THE "P11" PLUG INSTALLED OR A WIRE FEED MODULE INSTALLED.
ON CLASSIC I MACHINES CONNECT RED AND BLACK LEADS ON REMOTE TO RED AND BLACK LEADS ON MACHINE.
10-31-97L
L9262

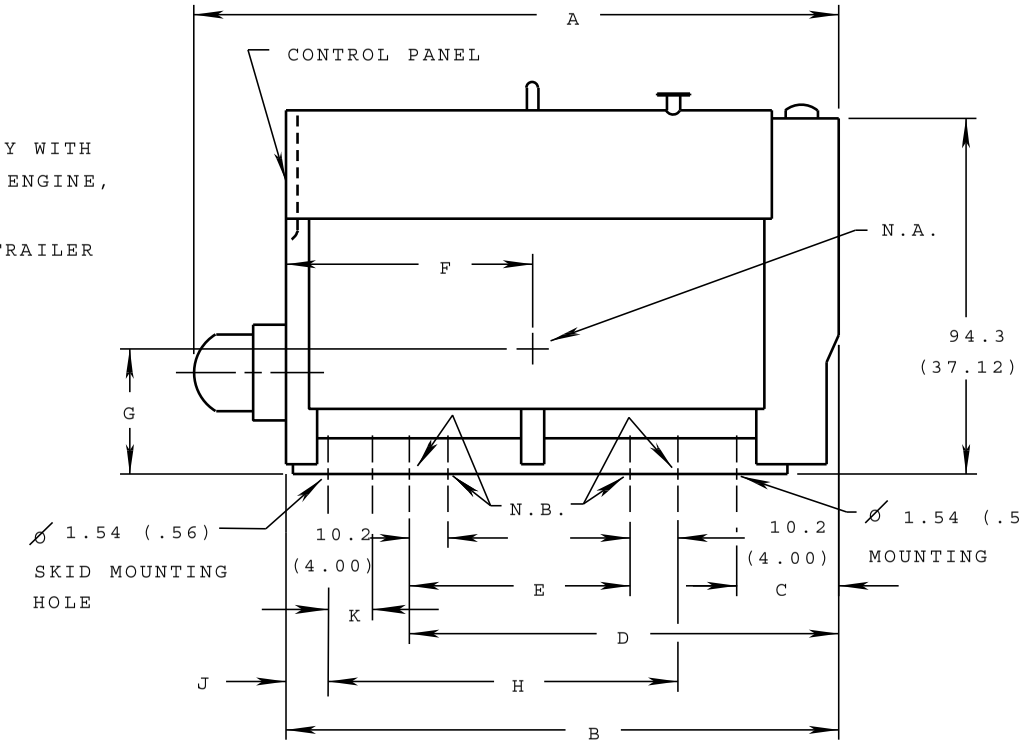
NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number..

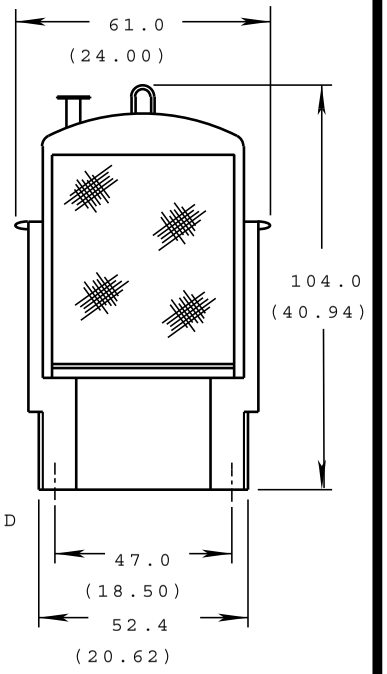
DIMENSION PRINT

NOTES:

N.A. CENTER OF GRAVITY WITH OIL AND WATER IN ENGINE, BUT NO FUEL.

N.B. ⌀ 1.54 (.56) TRAILER MOUNTING HOLES.





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		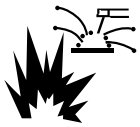	
WARNING	● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground.	● Keep flammable materials away.	● Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislese del trabajo y de la tierra.	● Mantenga el material combustible fuera del área de trabajo.	● Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre.	● Gardez à l'écart de tout matériel inflammable.	● Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden!	● Entfernen Sie brennbarres Material!	● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra.	● Mantenha inflamáveis bem guardados.	● Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。	● 燃えやすいものの側での溶接作業は絶対にしてはなりません。	● 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絕緣。	● 把一切易燃物品移離工作場所。	● 佩戴眼、耳及身體勞動保護用具。
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ضع المواد القابلة للاشتعال في مكان بعيد.	● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	**WARNING**
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
● Vermeiden Sie das Einatmen von Schweibrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os paineis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese **注意事項**
●頭部遠離煙霧。 ●在呼吸區使用通風或排風器除煙。	●維修前切斷電源。	●儀表板打開或沒有安全罩時不準作業。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic **تحذير**

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

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